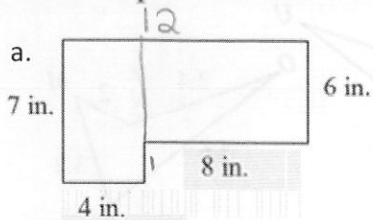


Name: ★ KEY ★

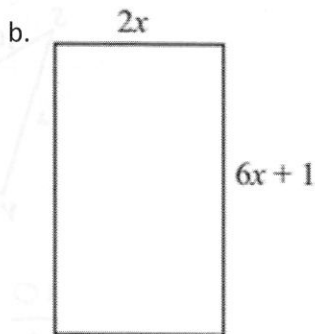
CP Geometry Final Exam Review

1. Find the perimeter and area of each figure below.



$$P = 7 + 12 + 6 + 8 + 1 + 4 = 38 \text{ in}$$

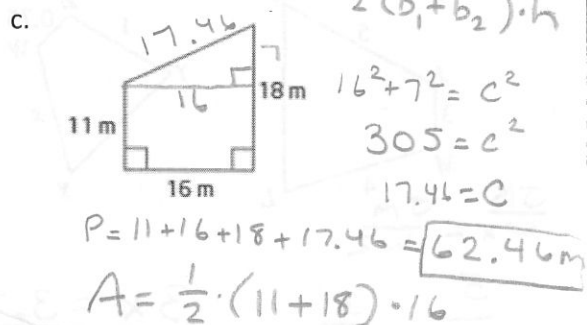
$$A = 7(4) + 8(6) = 76 \text{ in}^2$$



$$P = 2(2x) + 2(6x + 1) = 4x + 12x + 2 = 16x + 2 = P$$

$$A = 2x(6x + 1) = 12x^2 + 2x \text{ units}^2$$

Trapezoid  $A = \frac{1}{2}(b_1 + b_2) \cdot h$



$$A = 232 \text{ m}^2$$

2. Figure A

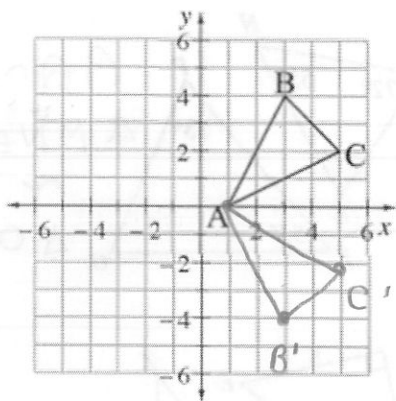


Figure B

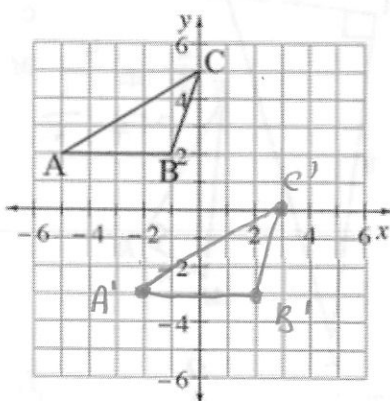
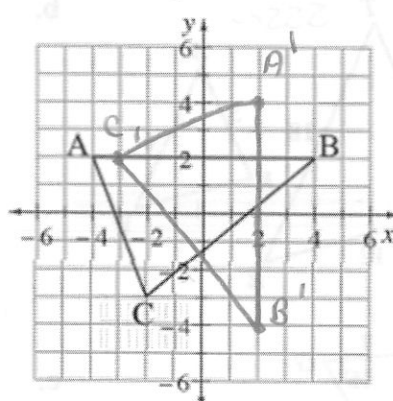


Figure C



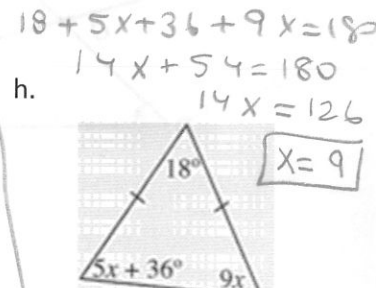
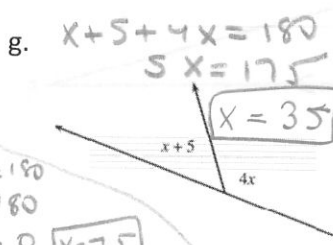
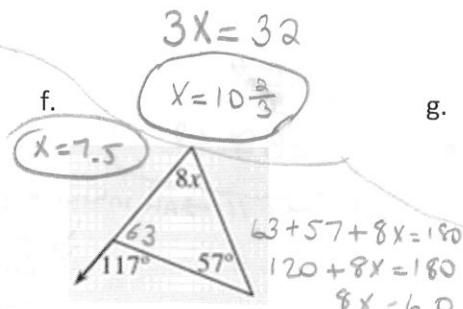
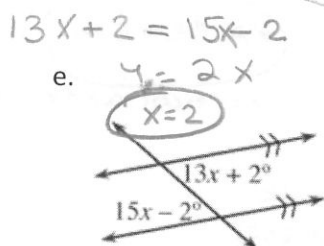
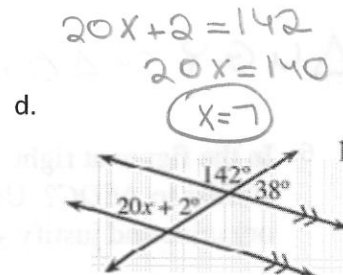
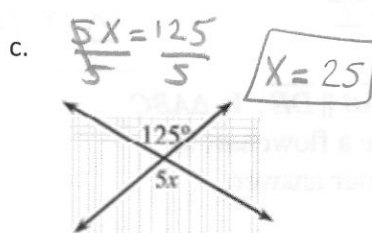
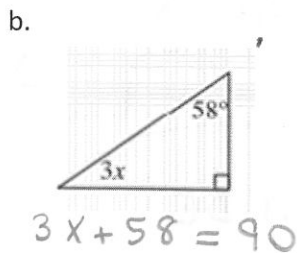
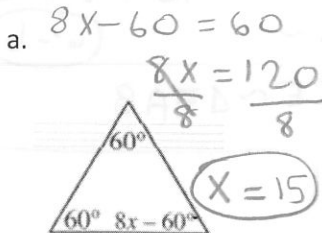
Perform each transformation, and then give the coordinate of A'.

a. Reflect Figure A across the x-axis.  $A'(1, 0)$

b. Translate Figure B right 3 units and down 5 units.  $A'(-2, -3)$

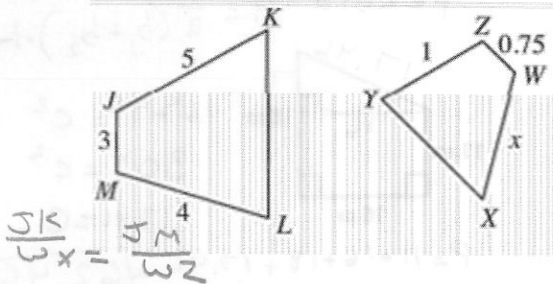
c. Rotate Figure C 90 degrees clockwise about the origin.  $A'(2, 4)$

3. Use the geometric properties and theorems you have learned to solve for x in each diagram.



4. Solve for the missing lengths in the pairs of similar figures below.

a.  $JKLM \sim WXYZ$



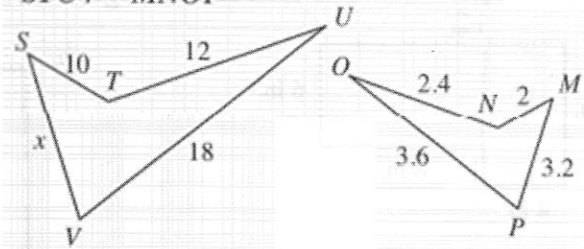
$$\frac{JK}{WZ} = \frac{LM}{XW}$$

$$\frac{5}{x} = \frac{3}{0.75}$$

$$3x = 3.75$$

$$x = 1.25$$

b.  $STUV \sim MNOP$



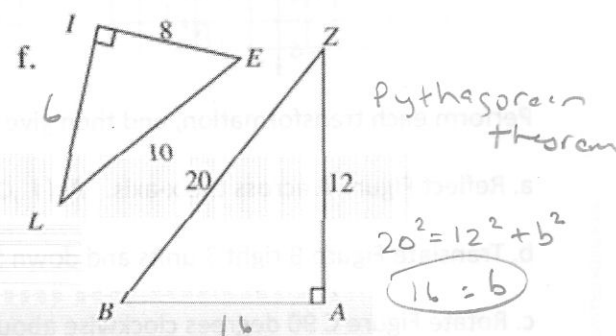
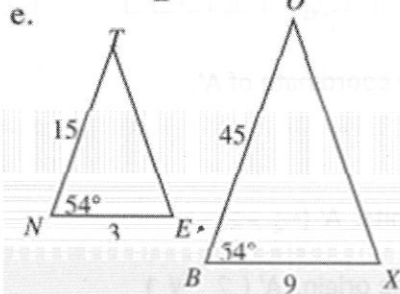
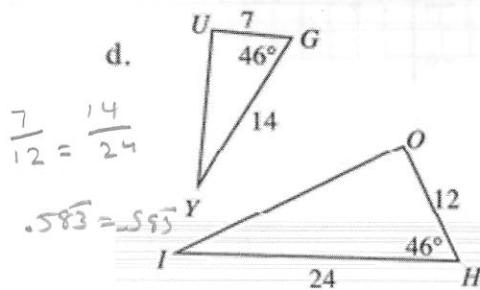
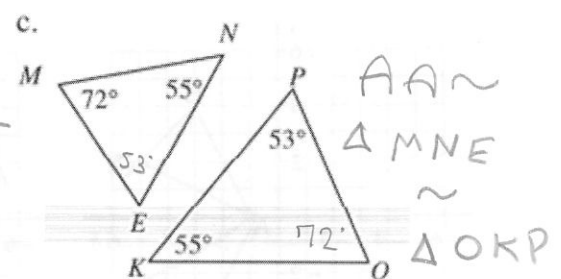
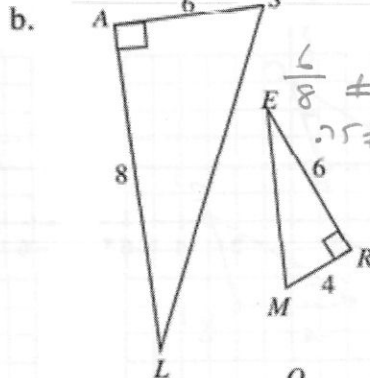
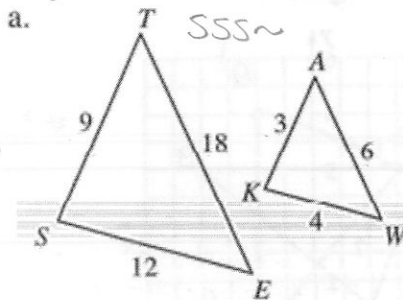
$$\frac{10}{2} = \frac{x}{3.2}$$

$$32 = 2x$$

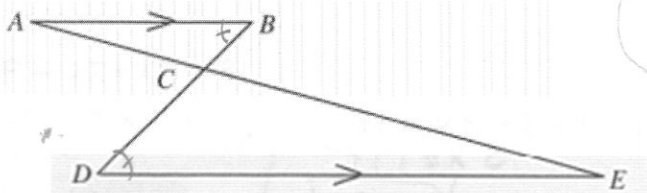
$$x = 16$$

5. Based on the given information, is each pair of triangles similar? If they are similar, write the similarity statement. Justify your answer completely.

yes Dilation of 3



6. In the figure at right  $\overline{AB} \parallel \overline{DE}$ . Is  $\triangle ABC$  similar to  $\triangle EDC$ ? Use a flowchart to organize and justify your answer.



$AB \parallel DE$

Given

$\angle B \cong \angle D$

If lines  $\parallel \rightarrow$  Alt. interior angles  $\cong$

$\angle ACB \cong \angle ECD$

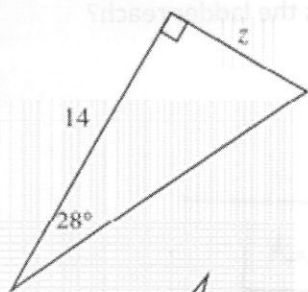
Vertical angles  $\cong$

$\triangle ABC \sim \triangle EDC$

AA~

7. Set up an equation and solve for the variable(s). Round to the hundredth.

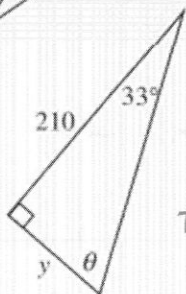
a.



$$\tan 28 = \frac{z}{14}$$

$$z = 7.44$$

b.



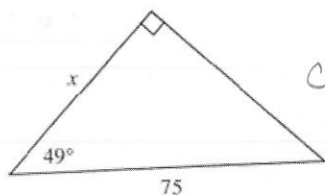
$$90 + 33 + \theta = 180$$

$$\theta = 57^\circ$$

$$\tan 33 = \frac{y}{210}$$

$$y = 136.38$$

c.

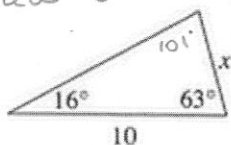


$$\cos 49 = \frac{x}{75}$$

$$49.2 = x$$

d.

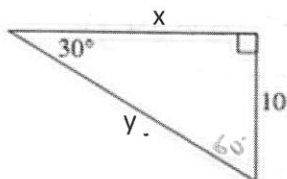
Law of Sines



$$\frac{\sin 16^\circ}{10} = \frac{\sin 101^\circ}{x}$$

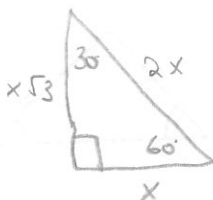
$$x = 2.81$$

e. (leave solutions in exact form)

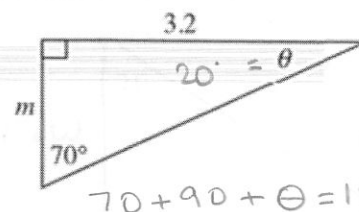


$$y = 2(10) = 20$$

$$x = 10\sqrt{3}$$



f.



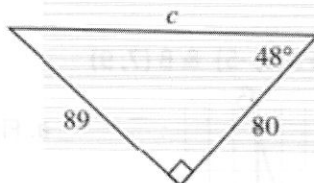
$$\tan 70 = \frac{3.2}{m}$$

$$m = 1.16$$

$$70 + 90 + \theta = 180$$

$$\theta = 20^\circ$$

g.

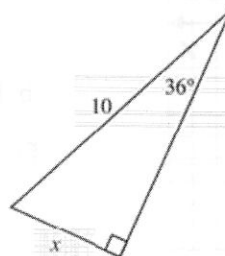


$$89^2 + 80^2 = c^2$$

$$14321 = c^2$$

$$119.67 = c$$

h.

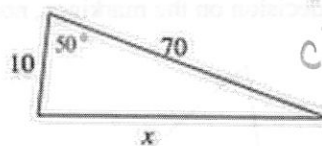


$$\sin 36 = \frac{x}{10}$$

$$5.88 = x$$

i.

Law of Cosines "SAS"

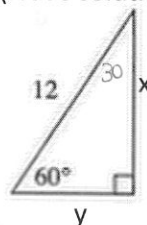


$$c^2 = a^2 + b^2 - 2 \cdot a \cdot b \cdot \cos C$$

$$x^2 = 10^2 + 70^2 - 2(10)(70) \cdot \cos 50^\circ$$

$$x^2 = 4100.097 \quad x = 64.03$$

j. (leave solutions in exact form)

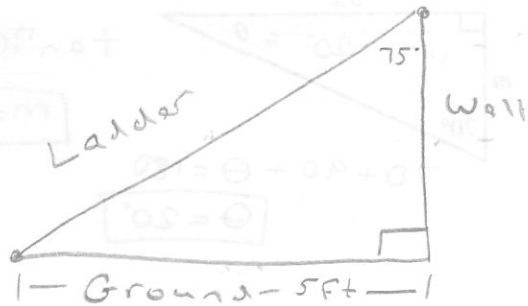


$$y = \frac{12}{2} = 6$$

$$x = 6\sqrt{3}$$

8. A ladder makes a  $75^\circ$  angle with the wall it is leaning against. The base of the ladder is 5 feet from the wall.

a. Draw and label a picture to represent this situation.

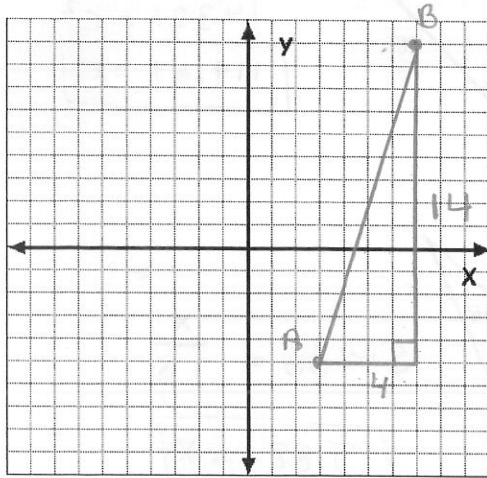


b. How high up the wall does the ladder reach?

$$\tan 75 = \frac{5}{x}$$

$$x = 1.34 \text{ feet}$$

9. Given the ordered pairs  $A(3, -5)$  &  $B(7, 9)$



a. Find the distance between the points.

$$4^2 + 14^2 = (AB)^2$$

$$212 = (AB)^2$$

$$14.56 = AB$$

units

b. Find the midpoint of segment AB

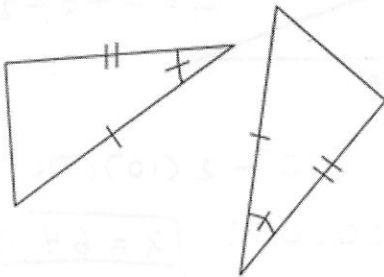
$$\text{midpoint} \left( \frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

$$= \left( \frac{3+7}{2}, \frac{-5+9}{2} \right) = (5, 2)$$

10. Use your triangle congruence conjectures to decide whether or not each pair of triangles must be congruent. Base each decision on the markings, not on appearances. Justify each answer.

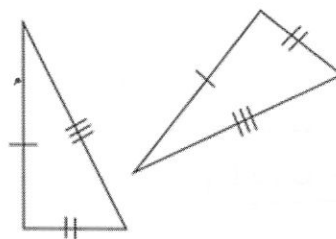
a.

$SAS \cong$



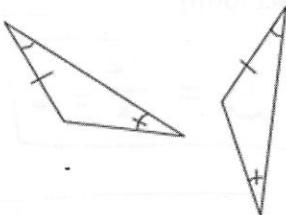
b.

$SSS \cong$



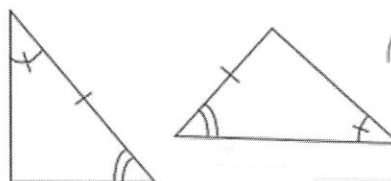
c.

$AAS \cong$



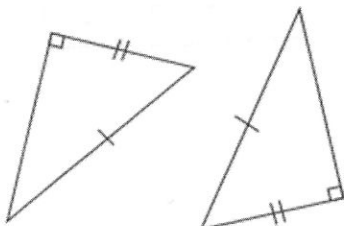
d.

Not enough info!



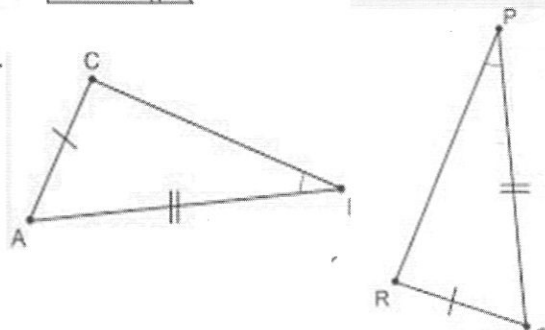
e.

$HL \cong$

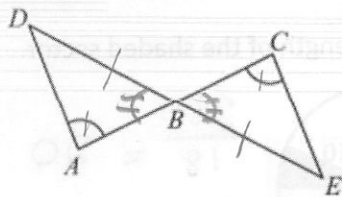


f.

Not enough info!  
~~SSA~~  
Ambiguous case

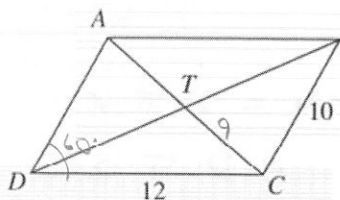


11. Given:  $\overline{AC}$  bisects  $\overline{DE}$ ,  $\angle A \cong \angle C$   
 Prove:  $\overline{DA} \cong \overline{CE}$



1.  $\overline{AC}$  bisects  $\overline{DE}$
  2.  $\angle A \cong \angle C$
  3.  $\overline{DB} \cong \overline{BE}$
  4.  $\angle DBA \cong \angle EBC$
  5.  $\triangle ABD \cong \triangle CBE$
  6.  $\overline{DA} \cong \overline{CE}$
1. Given
  2. Given
  3. Def. of bisector
  4. Vertical angles  $\cong$
  5. AAS  $\cong$
  6. If  $\triangle s \cong \rightarrow$  corr. sides  $\cong$

12. Given the parallelogram:



Find the perimeter. = 44  
 If  $CT = 9$ , find  $AT$ . 9  
 If  $m\angle CDA = 60^\circ$ , find  $m\angle CBA$  and  $m\angle BAD$ .  $120^\circ$   
 If  $AT = 4x - 7$  and  $CT = -x + 13$ , solve for  $x$ .

$$4x - 7 = -x + 13$$

$$5x = 20 \quad \boxed{x = 4}$$

15. Answer the following questions (polygons):

- a. If the sum of the measures of the interior angles of a polygon is  $2340^\circ$ , how many sides does the polygon have?

$$2340 = (n-2) \cdot 180$$

$$13 = n - 2$$

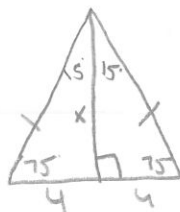
$$\boxed{n = 15 \text{ sides}}$$

- b. What is the measure of an exterior angle of a regular decagon?

$$360 / 12 = 30^\circ$$

- c. A regular dodecagon (12 sided polygon) has a side length of 8 units. What is its area?

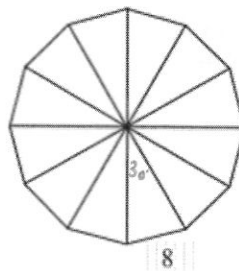
$$716.55 \text{ units}^2$$



$$\tan 75 = \frac{x}{4}$$

$$\boxed{14.93 = x}$$

$$\frac{360}{12} = 30$$



$$A_{\triangle} = \frac{1}{2} (b)(h)$$

$$= \frac{1}{2} (8)(14.93)$$

$$A_{\triangle} = 59.71$$

$$\times 12$$

$$716.55 \text{ u}^2$$

- d. What is the sum of the interior angles of a pentagon?

$$5 \text{ sides} \rightarrow \boxed{540^\circ}$$

$$(5-2)180 = 540^\circ$$

- e. Each angle of a regular n-gon measures  $156^\circ$ . How many sides does this n-gon have?

$$156 = \frac{(n-2)180}{n}$$

$$156n = 180n - 360$$

$$-24n = -360$$

$$\boxed{n = 15 \text{ sides}}$$

- f. Each exterior angle of a regular polygon measures  $22.5^\circ$ . How many sides does the polygon have?

$$\frac{360}{n} = \frac{22.5}{1}$$

$$\boxed{n = 16 \text{ sides}}$$

$$C = 2 \cdot \pi \cdot r \text{ units}$$

$$A = r^2 \pi \text{ units}^2$$

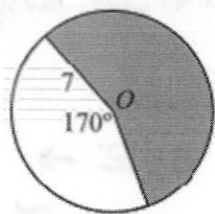
16. Answer the following questions (circles). Leave answers in exact form.

$$C = 16\pi \text{ cm}$$

$$A = 64\pi \text{ cm}^2$$

a. A circle has a radius of 8 cm. What are the circumference and the area of the circle? Leave answers in exact form.

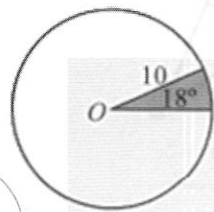
b. Find the area of the shaded sector:  $\frac{360}{170} = 2.1$



$$A_{\text{circle}} = 49\pi$$

$$A_{\text{shaded sector}} = \frac{49\pi}{(360/170)} = 23.14\pi \text{ units}^2$$

c. Find the arc length of the shaded sector.

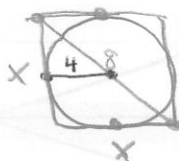


$$\frac{360}{18} = 20$$

$$C_{\text{circle}} = 20\pi \text{ units}$$

$$C_{\text{arc}} = \frac{20\pi}{20} = \pi \text{ units}$$

d. Find the area of a circle inscribed in a square whose diagonal is 8 feet long.



$$x^2 + x^2 = 8^2$$

$$2x^2 = 64$$

$$x^2 = 32$$

$$x = \sqrt{32} = 4\sqrt{2} \approx 5.66$$

$$\text{Diameter} = 4\sqrt{2}$$

$$\text{Radius} = 2\sqrt{2}$$

$$A_{\text{circle}} = 2 \cdot \pi \cdot r$$

$$= 2 \cdot \pi \cdot 2\sqrt{2}$$

$$A = 4\sqrt{2}\pi$$

e. The circumference of a circle is  $12\pi$  inches. What is the area of the circle?

$$r = 6$$

$$C = 2 \cdot \pi \cdot r$$

$$A = 36\pi \text{ in}^2$$

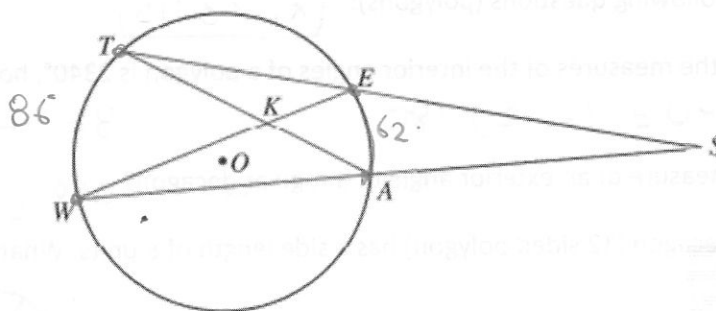
f. In  $\odot O$ ,  $m\widehat{WT} = 86^\circ$  and  $m\widehat{EA} = 62^\circ$ .

$$\text{Find } m\angle EWA. \frac{62}{2} = 31^\circ$$

$$\text{Find } m\angle WET. \frac{86}{2} = 43^\circ$$

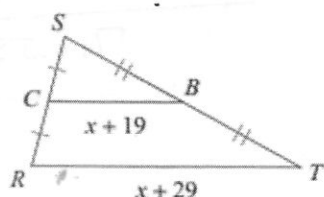
$$\text{Find } m\angle WES. 137^\circ$$

$$\text{Find } m\angle WST. \frac{86 - 62}{2} = 12^\circ$$



17.

a. Solve for x.



$$2(x+19) = x+29$$

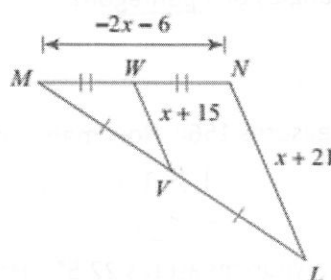
$$2x+38 = x+29$$

$$x = -9$$

$$RT = 20$$

$$CB = 10$$

b. Find VW



$$2(x+15) = x+21$$

$$2x+30 = x+21$$

$$x = -9$$

$$VW = -9 + 15 = 6$$